Indian Institute of Technology Patna
CS1101- Foundations of Programming

Lab4: Data types, Expressions, Programming

Date: 1-9-2025

Work in a separate directory named **Lab5**. You may use **gedit** & Editor (instead of **vi/nano)**.

Task1: Carefully explore the provided *L4_demos.c* program. Study each C construct demonstrated in the code, and document in your lab record any constructs or features that are new to you, along with brief notes on your observations.. (25 Points)

Task2: Carefully explore the provided *L5_demos.c* program. Study each C construct demonstrated in the code, and document in your lab record any constructs or features that are new to you, along with brief notes on your observations. (25 Points)

Task3: Carefully study the provided program *L5_FormatSwitch_Tut.c*. Analyze each C construct demonstrated in the code and document your understanding in your record. In addition, extend the tutorial by adding at least one new example for each relevant format specifier, ensuring that the enhanced program provides a broader coverage of the topic. (10 Points)

Task 4: Write a C program that prompts the user to enter the number of rows. The program should print a pyramid of numbers, where each row contains increasing digits starting from 1, as shown below. (10 Points)

The program should:

- Prompt the user to enter the number of rows.
- Use loops to generate the number pyramid.
- Display the number pyramid.

Enter the number of rows: 5

1
1 2
1 2 3
1 2 3 4
1 2 3 4 5

Task 5: Write a C program that displays a simple **mathematical operations menu** and allows the user to choose an operation using a switch statement. Based on the choice, the program should use a for loop to perform the selected task.

The menu should include:

1. Print the multiplication table of a given number (1 to 10).
2. Print all even numbers up to a given limit.
3. Print the factorial of a given number.
4. Exit the program.

Program Requirements:

- Use a switch statement to handle the menu selection.
- Use for loops to implement the chosen operations.
- The program should keep running until the user chooses **Exit**.

(30 Points)

----------MENU ----------
1. Multiplication Table
2. Even Numbers up to N
3. Factorial of a Number
4. Exit
Enter your choice: 1
Enter a number: 7
Multiplication Table of 7:
7 x 1 = 7
7 x 2 = 14
...
7 x 10 = 70

In Record

Task 1 and Task 2

Task 3,4 and 5: Demonstrate your work to TAs. Submit your code in single zip file to (roll_number.zip file) to

https://u.pcloud.com/#/puplink?code=u6bXZ3dOfo0nLCaJmNaJiIzjeC5TWCYoX